of the duties laid down for them, those even who were disposed to carry them out saw how useless it was for one district to be cleared while adjoining districts remained as practically breeding grounds for the pests. That a workable law is wanted has been shown by the attempts in 1839, 1849, 1851, and 1872, to introduce a bill that shall repeal the old law and substitute one that could be worked. The first two attempts fell through in consequence of dissolutions, the *coup d'état* interfered with that of 1851, but the proposal of 1872 was considered in March, 1873, passed a first reading December, 1874, a second on January 5, 1875; while the amendments were under discussion, however, M. Ducuing, the proposer, died. Last May a *projet du loi*, based on M. Ducuing's proposal, and somewhat modified in accordance with the discussion on the amendments, was introduced by MM. de la Sicotière, Grivart, and the Comte de Bouillé. They propose the law to apply to all harmful insects, the duty of destruction being imposed on the landowners and tenants. The time of the year to be selected for the destruction is to be made known by the prefect who will have scientific advice; the maires and commissionaires are to see that the law is carried out; in cases of neglect they are to have the work done, and recover the cost from those who should have done it. Special provisions are made for public lands, lands bordering on roads and railways. The fines are to range from 10 to 25 francs for a first offence. The articles that refer to the protection of birds that eat insects are not applicable to the wants of England as we already have legislation on that subject. But for years the want of some definite action to cope with "our insect foes" has been over and over again the subject of articles, speeches, and letters to the public press. The experience of France and America is that farmers must be compelled to look to their own interests. The department of practical entomology under the direction of the Committee of Council on Education is designed to give information regarding England's insect pests, but the question remains—How is the knowledge to be applied for the practical good of the country?

In connection with this important subject, the following extract from a Memorandum of the Canadian Minister of Agriculture, in reference to a despatch of the Secretary of State for the Colonies, on the subject of the Colorado Beetle is interesting:—

"The remedies which necessity has taught on this side of the Atlantic are such as to require for their application the joint effort of the community at large, kept alive to its interests and duties by the authorities, and men of devotedness to the common welfare. These remedies are (1) Searching for and crushing every potato-beetle where-ever found; (2) Frequent visits to the potato-fields, and searching for the eggs deposited on the under-side of the leaves of the potato-vine; and (3) Watching for the presence of the larvæ on the buds and on the leaves of the plant, in order to destroy them by means of Paris green, the only substance yet discovered to be effectually operative on a large scale for the destruction of the insect in its larva state. By these means, and by these means only, the invaded American States, and the Western part of Canada, have been able to secure potato-crops in a measure commensurate with the care and energy bestowed, and by similar means only can the invasion be retarded and lessened in its effects. No measure has been taken in Canada, for reasons given, to prevent the falling or creeping of individual insects on board ships loading in Dominion seaports. There is, however, almost a certainty that the environs of Montreal will be invaded next year, and with that prospect in view, general orders may be given to public officers and *employés* of the ports to look for and destroy any beetles which might be observed on the wharves, on sheds, on packages of goods to be embarked, or on board ships. A general appeal might also be made to all persons having to deal with the shipping for assistance in the execution of such preventive measures. The undersigned respectfully recommends the adoption of such precautions, beyond which he does not see that there is anything within the power of the Canadian Government to do."

CARL JELINEK

DR. CARL JELINEK was born at Brünn, in Moravia, on October 23, 1822. He entered the University of Vienna in 1839 as a student of law, but soon thereafter his attention was turned more exclusively to the mathematical and physical sciences. In 1843 he assisted in the work of the Vienna Observatory, and in 1847 was appointed assistant in the observatory of Prague. It was while assisting in the work of the Vienna Observatory, then under the direction of Kreil, that his interest in exact observations in the fields of meteorology and magnetism was awakened—an interest deep and strong, which soon merged in a life-sacrifice to the furtherance of these sciences.

It is not necessary here to dwell upon his connection with the events of 1848 further than to say that the high moral qualities for which he was in after life so remarkable were even then conspicuous, and that the knowledge he then acquired of men and affairs was an invaluable training for the successful discharge of the duties of the public offices he afterwards filled.

His first important contribution to science was a paper published in 1850 on the construction of self-registering meteorological instruments, an important department of practical science to which he continued to make contributions down to the last. Indeed the last published number of the *Journal* of the Austrian Meteorological Society opens with the last of a series of articles by him on this subject. He was appointed in 1852 Professor of the higher mathematics in the Polytechnic School at Prague. Eleven years afterwards, or in 1863, he returned to Vienna as successor to Kreil, the first director of the Central Institute for Meteorology and Magnetism at Vienna. In this new sphere his remarkable powers of administration and organisation had full scope. The influence of this calm, eager, untiring, and clear-sighted worker and administrator was immediately felt. A new spirit was infused into the machinery of the institute, its resources were increased, connections were formed on all sides with the similar institutes and societies of other countries, and its annual publications were enlarged and improved; and in the course of time not the least important change was effected by the erection of new buildings for the Meteorological Institute on the Hohe Warte —an open commanding position on the outskirts of Vienna—thoroughly equipped with all the instruments required for meteorological and magnetical observation of the most improved construction, and placed in positions which indicate a clear perception of the problems to be investigated and the methods by which the observational data for their solution might be obtained.

On June 14, 1864, he was elected a corresponding, and on August 3, 1866, a full member of the Imperial Academy of Sciences at Vienna. In 1864 he became a member of the Unterrichtsrath, and from 1870 to 1873 acted as secretary of the High Schools for technology and the schools for industry and commerce, and brought to bear on the discharge of these duties the matured results of science, a strong will, and an eagerness and activity that never flagged, which were productive of the best results to the interests of the department he served. His public services were recognised when he retired from the education department in 1873, by having conferred on him the title and rank of Hofrath and the distinction of Knight of the order of the Iron Crown.

It is, however, in meteorology that he appears as an

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original investigator endowed with an extraordinary capacity for work. In these respects meteorology is perhaps the sternest of the sciences in exacting from those of its votaries who make any permanent contribution to its literature not only keen scientific insight, but also courage to encounter for years, if need be, the constant drudgery of calculations before the end sought can be attained.

That Dr. Jelinek published scarcely any important work on meteorology from 1850 to 1865 need excite no surprise if we keep in view the great and important works on Austrian meteorology which appeared in quick succession from his pen between the years 1865 and 1870. The papers here referred to, about ten in number, several being really voluminous productions, are all of them rich in well-digested tabular matter, which, in relation to the subjects discussed, is of the most satisfying character. The paper on the five-day mean temperatures at Austrian stations from 1848 to 1863 contains 130 closely-printed quarto pages of tables. Among the subjects discussed in these papers are the mean annual and monthly distribution of atmospheric pressure and thunderstorms, and the annual, monthly, five-day, daily, and hourly distribution of temperature over the Austrian Empire; the temperature of Vienna for the ninety years from 1775 to 1864 thus supplying data calculated to throw light on not a few cosmical questions; the cold weather which occurs in May, and the storms of November and December, 1866. An important result of this work is that over the whole of Austria a closely approximate statement can be given as to how far the temperature as observed at any hour of any day of the year is above or below the average. In addition to the above, he wrote his admirable and well-known "Anleitung zu Meteorologischer Beobachtungen," which has already in the present year reached its third edition, and in 1866 established and edited, jointly with Dr. Hann, the *Journal* of the Austrian Meteorological Society, which is published fortnightly, and which, from its liberal and catholic spirit, and the position in science it has attained, stands alone among meteorological publications. In 1865 he succeeded in introducing telegraphic weather reports in Austria. Dr. Jelinek was also Secretary of the Meteorological Society of Austria, and the important services he rendered in connection with the Meteorological Congresses at Leipsig and Vienna are well known.

Thus the Austrian Meteorological Institute, under Dr. Jelinek's management, has not merely made observations and published results, but it has also discharged the functions of a discussing body of a high order. The domain of meteorology in which Dr. Jelinek takes the highest position is that which is concerned with the discussion of averages, taking the term in its widest significance. It is here where his scientific insight appears to the best advantage. We may refer in illustration to the judicious use he makes of the method of differentiation in the discussion of such problems as the normal atmospheric pressure in Austria during the months of the year. He does not commit the mistake of taking different terms of years for different places, according as observations at each place were available, but by the application of the method of differentiation he practically takes the same terms of months and years for all places. In all his writings there is evinced the greatest care to avoid giving expression to any view or speculation unless he had taken the trouble of collecting together all available information that lay in his power bearing on the point in question.

He died, after a lingering illness, on October 19, being thus prematurely cut off at the comparatively early age of fifty-four—a man of singularly noble and spotless character, ever on the alert, if we may use the expression, to discover and recognise real work wherever it appeared, and ever ready to offer his help to workers in science, even though he could do so only at the expense of much personal trouble and fatigue. His beneficence was characteristic of the man, being absolutely without ostentation, and his kindly acts were performed as if his left hand knew not what his right was doing.

OUR ASTRONOMICAL COLUMN

THE DISTANCES OF THE STARS.—We shall here endeavour to present at one view the most reliable results of investigations relating to stellar parallax up to the present time. In making the selection parallaxes less than a tenth of a second of arc are omitted except in the case of the pole-star, for which independent researches have given values closely approximating to this amount. In estimating the "light-years," we adopt Struve's determination of the time occupied by light in traversing the mean distance of the earth from the sun, viz., 8m. 17·78s. (According to Leverrier's last value for the solar parallax, and Clarke's diameter of the earth's equator, this would assign for the velocity of light, 185,360 miles per second, at which rate of travelling it would arrive at the planet Neptune in 4h. 10m., or the breadth of the planetary spaces as at present known would be traversed in less than 8½ hours.) By "light-years" is of course to be understood the interval which light would require to pass from the star to the earth at the distances respectively assigned.

The authorities are, for α Centauri, Henderson's value as corrected by Peters, and that of Moesta, the mean; for 61 Cygni, Auwer's mean of his own result and that of Otto Struve; Lalande 21185, Winnecke; β Centauri, Sir Thomas Maclear; μ Cassiopeæ, Otto Struve; Groombridge 34, Auwers; Capella, Otto Struve; Lalande 21258, Krüger; Oeltzen 17415, Krüger; σ Draconis, Brünnow; Sirius, Gylden from Maclear's observations at the Cape of Good Hope; α Lyræ, Brünnow's mean; 70 Ophiuchi, Krüger; η Cassiopeæ, Otto Struve; Procyon, Auwers; Groombridge 1830, a mean of results of Brünnow, Schlüter, Wichmann, and Otto Struve; and for Polaris, Peters.

Name of Star and Magnitude.	Annual Parallax.	Distance in Solar Distances.	Light-years.
	″		
α Centauri (1 and 4)	0·928	222,300	3·5
61 Cygni (5½ and 6)	0·553	373,300	5·9
Lalande 21185 (7½)	0·501	411,700	6·5
β Centauri (1)	0·470	439,100	6·9
μ Cassiopeæ (5½)	0·342	603,100	9·5
Groombridge 34 (8½)	0·307	671,900	10·6
Capella (1)	0·305	676,300	10·7
Lalande 21258 (8½)	0·271	761,400	12·0
Oeltzen 17415 (8½)	0·247	835,100	13·2
σ Draconis (5)	0·246	838,500	13·2
Sirius (1)	0·193	1,069,000	16·9
α Lyræ (1)	0·180	1,146,000	18·0
70 Ophiuchi (4½)	0·162	1,273.000	20·1
η Cassiopeæ (4½ and 7)	0·154	1,339,000	21·1
Procyon (1)	0·123	1,677,000	26·5
Groombridge 1830 (6½)	0·118	1,748,000	27·6
Polaris (2)	0·091	2,267,000	35·7

In the third column is given the distance of the star from the earth, in mean distances of the earth from the sun, as is usual; it will be seen how greatly the alteration, even of a single unit in the last decimal place of the annual parallax in the preceding column, affects these numbers.

So far as our present knowledge extends, light, travelling at upwards of 185,000 miles per second requires 3½ years to pass from the nearest fixed stars to the earth, and it does not reach us from our well-known northern polar star in less than thirty-five years.

THE TOTAL SOLAR ECLIPSES OF 1239, JUNE 3, AND 1241, OCTOBER 6.—Prof. Celoria has published an important memoir on these eclipses, in the *Transactions* of the Royal Institute of Sciences at Milan, vol. xiii. He refers to a note in NATURE, vol. xii., p. 167, in which, when remarking on his first compu-

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